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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,233	08/20/2003	Satoshi Masumi	5405-5	6472

7590 07/12/2006

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EXAMINER

MRUK, GEOFFREY S

ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 07/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/644,233

Applicant(s)

MASUMI, SATOSHI

Examiner

Geoffrey Mruk

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,4,6-8 and 15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6-8 and 15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7 June 2006 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 4, 6, 7, 8, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feinn et al. (US 6,193,345 B1) in view of Carlson et al. (US 6,534,128 B1).

With respect to claim 1, the primary reference of Feinn discloses an ink jet printer (Fig. 1, element 10) comprising: a recording head (Fig. 1, element 18) on which a plurality of nozzles (Fig. 3, element 82) for jetting ink are arranged; and a feeding member (Fig. 1, elements 12A, 12B) for feeding a recording medium (Column 6, line 7),

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wherein an image is recorded by jetting the ink from the nozzles of the recording head to the recording medium fed by the feeding member (Column 6, lines 4-21); wherein a jetting opening (Fig. 8, element I) of each nozzle, from which the ink is jetted, has a diameter of not less than 12 μ m and not more than 22 μ m (Table III, Orifice Diameter I); wherein a volume of a drop of the ink jetted from each nozzle is not less than 1 pico-liter and not more than 6 pico-liter (Table III, Drop Volume).

With respect to claim 3, the primary reference of Feinn discloses a supply opening side (Fig. 8, element H) of each nozzle (Fig. 8, element 82), to which the ink is supplied, differs from a jetting opening side (Fig. 8, element I) of each nozzle in an angle of an inner circumferential surface of the nozzle with respect to a center line of the nozzle.

With respect to claim 4, the primary reference of Feinn discloses the jetting opening (Fig. 8, element I).

With respect to claims 6 and 7, the primary reference of Feinn discloses the ink (Column 6, lines 33-34).

With respect to claim 8, the primary reference of Feinn discloses an image recording method comprising forming an image by jetting ink to a recording medium (Column 6, lines 4-21).

However the primary reference of Feinn fails to disclose:

- With respect to claim 1, the ink substantially includes no volatile component, a viscosity of the ink is not less than 20 mPa.s and not more than 200 mPa.s at 25°C, and the viscosity of the ink is not less than 8

mPa's and not more than 30 mPa's when the ink is jetted from each nozzle, and wherein each dot diameter formed on the recording medium is from 50 to 200 μ m.

- With respect to claim 4, a head a head temperature adjusting mechanism arranged in the neighborhood of the jetting opening, for adjusting a temperature of the ink at the jetting opening to not less than 30°C,
- With respect to claims 6 and 15, the ink includes an active energy ray curable compound, and
- With respect to claim 7, an active energy ray radiating member for radiating an active energy ray to the recording medium to which the ink is jetted from the nozzle, in order to harden the active energy ray curable compound.

The secondary reference of Carlson discloses radiation curable printing inks (Column 2, lines 45-54) where:

- With respect to claim 1, the ink substantially includes no volatile component (claim 1), a viscosity of the ink is not less than 20 mPa.s and not more than 200 mPa's at 25°C (Column 4, lines 38-60), and the viscosity of the ink is not less than 8 mPa's and not more than 30 mPa's when the ink is jetted from each nozzle (Column 4, lines 56-60), and wherein each dot diameter formed on the recording medium is from 50 to 200 μ m (Column 22, lines 34-36).

- With respect to claim 4, a head a head temperature adjusting mechanism arranged in the neighborhood of the jetting opening, for adjusting a temperature of the ink at the jetting opening to not less than 30°C (Column 4, lines 54-67, i.e. desired print head temperature),
- With respect to claims 6 and 15, the ink includes an active energy ray curable compound (Column 5, lines 53-67; Column 6, lines 1-54), and
- With respect to claim 7, an active energy ray radiating member for radiating an active energy ray to the recording medium to which the ink is jetted from the nozzle, in order to harden the active energy ray curable compound (Column 5, lines 53-67; Column 6, lines 1-54).

Although Carlson does not explicitly disclose an active energy ray radiating member, one would necessarily be present in order to cure the ink composition.

At the time of the invention, it would have been obvious to use the ink compositions of Carlson in the chamber of Feinn. The motivation for doing so would have been "The viscosity characteristics of the compositions are low enough so that conventional solvent is not required in order to satisfy the requisite low ink jet viscosity specifications" (Column 2, lines 45-54).

Response to Arguments

Applicant's arguments filed 15 May 2006 have been fully considered but they are not persuasive. The applicant's argument that "Neither Feinn nor Carlson, nor any of the other applied references, discusses or suggests the diameter size of the dot formed

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on a recording medium to be from 50 to 200 μ m" is not persuasive. However, Carlson et al. state "Dot diameters of 122 microns on 180-10 vinyl and 160 microns on DG sheeting were observed" (Column 22, lines 34-36). Therefore, Feinn et al. in view of Carlson et al. meet the claimed limitation.

Conclusion

The examiner makes of record that the previous claim objections dated 3 March 2006 are withdrawn in view of applicant's remarks.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey Mruk whose telephone number is 571 272-2810. The examiner can normally be reached on 7am - 330pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on 571 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



STEPHEN MEIER
SUPERVISORY PATENT EXAMINER

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

GSM
7/5/2006



STEPHEN MEIER
SUPERVISORY PATENT EXAMINER